METHOD AND MEDIA FOR VIRTUAL PRODUCT PLACEMENT

BACKGROUND OF THE INVENTION

Field of the Invention.

This invention relates to graphics applications generally, and specifically to the use of such applications in rendering product placement in media content and further to methods of doing business related thereto.

Description of the Related Art

Product placement is a well-known and long-standing practice in the entertainment content and production industry, in which articles of manufacture which are readily identifiable by the public, either because of distinctive trade dress or prominent trademark, are displayed within the content or the production. Though often the display of the item is merely incidental to the content or production, such product placement can have highly advantageous effect upon the perception of the product and can serve as effective advertising for the product, as was the case for *Reese's Pieces* in Spielberg's *E.T., the Extraterrestrial.*

In an area of art heretofore unrelated to the foregoing, in recent years great strides in computer hardware dedicated to computation and graphics processing, on the one hand, and great advances in computer software in image-based rendering and other software arts for creating realistic three-dimensional images, on the other hand, have made possible new ways of generating, manipulating and transforming the content of visual media. Highly believable computer rendered visual effects in *Jurassic Park, The Lost World* and *Star Wars Episode I The Phantom Menace* contribute greatly to the popularity of these films. And, in a trend beginning with *Toy Story* and continued in *Ants* and *A Bug's Life*, the visual content of some major motion pictures is now created entirely by computer. The potential of these powerful new tools for creating virtual images of three dimensional objects and actors is just beginning to be exploited.

SUMMARY OF THE INVENTION

The present invention discloses the application of editing tools of the related art to enable virtual product placement in existing moving content. The present invention further discloses media in which such product placement is employed. The ability to create virtually placed products in media, in turn, enables new ways of doing business in product placement, which also are disclosed in the present invention.

It is an object of the present invention to provide a system whereby the representation of the brand of a commercial product as an item in existing moving content may be replaced with the representation of another brand for the item. It is a further object of the present invention to provide a system of metrics for selling such virtual product placement to interested parties.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of the steps involved in editing of moving content such as video, film, etc.

FIG. 2 is a block diagram representing the use of paint applications to introduce static items in moving content.

FIG. 3 is a block diagram representing the use of montage to introduce dynamic items in moving content.

FIG. 4 is a block diagram representing the use of animation to introduce animated items in moving content.

FIG. 5 shows the composition of a representative scene in MPEG-4 format.

FIG. 6 shows the composition of a synthetic computer generated can in MPEG-4 format.

FIG. 7 is a diagramatic representation of the modification of an item within a scene of moving content resulting in virtual product placement.

FIG. 8 is a diagramatic representation of an information handling system that may be employed in implementing the present invention.

FIG. 9A is a diagramatic representation of selling, producing and distributing product placement by time slot.

FIG. 9B is a diagramatic representation of selling, producing and distributing product placement by geographical distribution.

FIG. 9C is a diagramatic representation of selling, producing and distributing product placement by distribution channel.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to **FIG. 1**, a block diagram is shown of the steps involved in editing **100** of moving content. "Moving content" herein refers to content, regardless of format or embodiment in media, that may be reproduced to display moving images and sound to a viewer. Original content **101** may comprise moving content from film. Alternatively, original content **101** may comprise moving content from a video stream such as from broadcast or cable television or from streaming video on a network such as RealVideo format from RealNetworks of Seattle, Washington or QuickTime format from Apple Computer, Inc. of Cupertino, California. As another alternative, original content **101** may comprise moving content stored one of numerous file formats, such as .mov, used for storing files in the computer arts. In some embodiments, original content **101** may not even be stored or recorded but instead may be rendered as delivered to a viewer, as in many graphical computer or video games. A preferred mode of editing **100** being digital, original content **101** is digitized **102** to produce a digital source file **103** usable by digital editing process **100.** One industry standard for such a digital source file **103** is the Open Media Framework® Interchange (OMFI) file format promulgated by Avid Technology, Inc. of Tewksbury, Massachusetts. An important characteristic of digital source file **103** is that elements of the original content are digitally referenced so that individual elements of original content **101** may be individually edited and manipulated in a non-linear fashion in digital editing process **100**.

Editing of digital source file **103** comprises progressively and recursively modifying and manipulating the audio source **104** and visual source **108** originally derived from digital source file **103**. Editing of digital source file **103** further comprises the addition of new sound elements **115**, **116**, **117** to audio source **104** and new visual elements **118**, **119**, **120** to visual source **108**. While synchronization between audio source **104** and visual source **108** throughout editing is inherent in the digital referencing methods of modern digital editing **100**, audio source **104** and visual

source **108** are edited in combination and finely synchronized in the final editing and mix **113** of the content, to yield edited content **114**.

Examining the processes set forth in FIG. 1 in greater detail, editing of audio source **104** further comprises editing of speech elements **105**, sound elements **106** and music elements **107**. Speech elements that are edited **105** comprise narration or dialog elements from source file **103** that are deleted or modified, or that are added from outside speech sources **115** as determined in editing process **100**. Sound elements are edited **106** by modifying sounds from source file **103** by such techniques as employment of looping to create and insert background sounds and foley artistry to enhance sounds from source file **103**. In addition, sound editing **106** comprises the addition of sound effects from outside sound sources **116** as needed. Music elements are edited **107** by musical editing and mixing techniques well known in the art, with the introduction of music elements from outside sources **117**.

Similarly, conventional editing **100** of visual source **108** comprises employing "paint" application software **110** to static graphic elements of source file **103**, montage techniques **111** to moving image elements of source file **103**, and animation **112** to introduce animated elements **120** to source file **103**. In addition, paint **110** may introduce graphic elements from outside sources **118**, and montage **111** may introduce moving image elements from outside sources **119**.

Editing **100** takes place progressively and recursively, with editing steps **105**, **106**, **107** successively applied to audio source **104** and steps **110**, **111**, **112** successively applied to visual source **108**. Audio source **104** and visual source **108** are together subjected to successive applications of composite editing and mix **113** to assure conformity of visual source **108** and audio source **104**, leading to refinement of the moving content, thus ultimately resulting in finished edited content **114**.

Advantageously for the present invention, in the hands of a skilled editor this now standard form of editing allows the editor to create and replace the appearance of items in visual content by paint, montage and animation.

Static items in visual content may be replaced by painting directly into the content. As illustrated in **FIG. 2**, a scene with an item to be replaced **201** is modified

by paint application **202** wherein graphics **203** are added over the item to be replaced to form a scene **204** containing the replaced item.

Dynamic items require more complex techniques to be replaced. Referring now to **FIG. 3** showing montage, the content **301** containing the item to be replaced is modified to create content **303** wherein the item to be replaced is masked. In addition, content **302** is obtained containing a replacement item. Content **302** is modified to yield content **304** wherein all but the replacement item is masked. Content **303** and content **304** are combined and synchronized **305** to form content **306** containing the replacement item from content **302** within the scene from content **301**.

Referring now to **FIG. 4** showing animation, the content **401** containing the item to be replaced is modified to create content **403** wherein the item to be replaced is masked. Animation **402** containing an animated representation of the replacement item is created to match the mask of the item to be replaced in content **403**. Masked content **403** is combined and synchronized **404** with animation **402** to form content **405** containing the animated item within the scene from content **401**.

Multimedia standard MPEG-4, developed by the Motion Picture Experts Group for the International Organization for Standardization, presents alternative or complementary methods for editing moving content, in particular for providing edited objects in moving content. Unlike its predecessors MPEG-1 and MPEG-2, which were essentially linear file formats for compression and transmission of moving content, MPEG-4 is a radically object-oriented paradigm. MPEG-4 is particularly suited to the production and manipulation of rendered moving content as well as recorded moving content. Within MPEG-4, audio and visual elements of moving content are known as objects. Objects can exist independently, or multiple ones can be grouped together to form higher level composite objects, referred to as "compositions". A scene in moving content can be represented as an MPEG-4 composition of objects.

In MPEG-4, visual objects in a scene are described and projected mathematically upon the two-dimensional space which represents the two- or three-dimensional space of the scene. Similarly, consistent with such aural standards as SurroundSound®, audio objects in MPEG-4 are placed in a sound space

representation of the scene. When placed in a representation of the space of the scene, in MPEG-4 the video, audio or composite object need only be defined once. As the scene vantage point and the position of an object in moving content change over time, calculations and operations to update the display and sound are performed and executed so as to render the object properly in the scene.

Referring now to **FIG. 5**, a representative scene **501** may comprise a composition of an actor holding a can **502**, within a setting video object of floors and walls **503** filled with furniture objects **504**. In this example, furniture objects may comprise a real video object chair **505**, a real video object side table **506**, and a synthetic animated object magic lamp **507**. Actor composition **502** may further comprise a real video object actor **508** and a synthetic computer generated can **509**.

In terms of editing, the strength of the object-oriented representation in MPEG-4 is that audio and visual elements may be easily and independently manipulated. The equivalents of paint **110**, montage **111** and animation **112** as illustrated in **FIG. 1** are executed in MPEG-4 by performing operations on visual objects. Similarly, equivalents to audio editing of speech **105**, sound **106** and music **107** as illustrated in **FIG. 1** are executed in MPEG-4 by performing operations on audio objects.

Representation of visual objects in MPEG-4 may be further accomplished by mapping images onto computer generated shapes. This method, combining aspects of paint **110**, montage **111** and animation **112**, comprises creating a mathematical model of the object in the form of a line-drawing "wire-frame" or "mesh" representing the general object in space and then using algorithms well known in the art of computer animation to map images onto the mesh, thereby creating an "instantiation" of the object. In principal, any mesh may have any image mapped onto it. Such a computer generated synthetic object may, in turn, be grouped with other objects to form a composite object within a composition.

Referring now to **FIG. 6**, synthetic computer generated can **509** from **FIG. 5** further comprises a computer generated mathematical model can mesh **601** and a can image **602** mapped onto mesh **601**. Can image **602** may be purely synthetic animation, or in the alternative it may be video content representing a real can. In either case, as

will be appreciated by those skilled in the art, the item which can object **509** represents may be easily replaced simply by replacing can image **602** with another image. By employing such a technique, an MPEG-4 editor may replace and substitute items in visual content with relative ease.

The ability easily to replace items in moving content, as described hereinabove, enables the present invention. Simply put, the present invention comprises a system of replacing commercial items in moving content with other items. Such virtual product placement enables new and useful ways of doing business related thereto.

As will be appreciated by those skilled in the art, and advantageously for the present invention, the foregoing editing techniques may be applied to works in various stages of production, including post-production. Existing finished works may be modified to yield new versions with the content changed as desired. A simple embodiment of the present invention would entail the modification of a work to include the placement of a desired product. Such product placement could occur serially as well, with successive versions of a work containing different product placements. In the alternative, beginning with the same content, several contemporaneous versions of original moving content may be created, different versions containing placement of different products therein.

Exemplary of the present invention, referring now to **FIG. 7**, suppose that scene **701** is a portion of valuable moving content **700**, such as a popular motion picture or video game. Suppose further that, contextually, can **703** is a can of beer. The identity of the brand of beer can **703** has value as product placement within the moving content **700**. In the prior art, the identity of the brand of beer can **703** would be fixed by the actual can of beer used in production and its value as product placement would therefore be limited to that single brand. According to the teaching of the present invention, however, the brand identity of beer can **703** may be modified to suit various business needs.

Digital editing **100** and manipulation of MPEG-4 compositions **501** are accomplished by an information handling system, preferably a general purpose computer. Referring to **FIG. 8**, a block diagram of an exemplary information handling system **800** operable to employ the present invention is shown. In this embodiment,

processor **802**, system controller **812**, cache **814**, and data-path chip **818** are each coupled to host bus **810**. Processor **802** is a microprocessor such as a 486-type chip, a Pentium7, Pentium II7, Pentium III7 or other suitable microprocessor. Cache **814** provides high-speed local-memory data (in one embodiment, for example, 512 KB of data) for processor **802**, and is controlled by system controller **812**, which loads cache **814** with data that is expected to be used soon after the data is placed in cache **812** (i.e., in the near future). Main memory **816** is coupled between system controller **814** and data-path chip **818**, and in one embodiment, provides random-access memory of between 16 MB and 128 MB of data. In one embodiment, main memory **816** is provided on SIMMS (Single In-line Memory Modules), while in another embodiment, main memory **816** is provided on DIMMs (Dual In-line Memory Modules), each of which plugs into suitable sockets provided on a motherboard holding many of the other components shown in **FIG. 8**. Main memory **816** includes standard DRAM (Dynamic Random-Access Memory), EDO (Extended Data Out) DRAM, SDRAM (Synchronous DRAM), or other suitable memory technology. System controller **812** controls PCI (Peripheral Component Interconnect) bus **820**, a local bus for system **800** that provides a high-speed data path between processor **802** and various peripheral devices, such as video, disk, network, etc. Data-path chip **818** is also controlled by system controller **812** to assist in routing data between main memory **816**, host bus **810**, and PCI bus **820**.

In one embodiment, PCI bus **820** provides a 32-bit-wide data path that runs at 33 MHZ. In another embodiment, PCI bus **820** provides a 64-bit-wide data path that runs at 33 MHZ. In yet other embodiments, PCI bus **820** provides 32-bit-wide or 64-bit-wide data paths that runs at higher speeds. In one embodiment, PCI bus **820** provides connectivity to I/O bridge **822**, graphics controller **827**, and one or more PCI connectors **821**, each of which accepts a standard PCI card. In another embodiment, a television tuner **823** is included for viewing television signals. In yet another embodiment, I/O bridge **822** and graphics controller **827** are each integrated on the motherboard along with system controller **812**, in order to avoid a board-connector-board signal-crossing interface and thus provide better speed and reliability. In the embodiment shown, graphics controller **827** is coupled to a video

memory **828** (that includes memory such as DRAM, EDO DRAM, SDRAM, or VRAM (Video Random-Access Memory)), and drives VGA (Video Graphics Adaptor) port **829**. VGA port **829** can connect to VGA-type or SVGA (Super VGA)-type displays. Other input/output (I/O) cards having a PCI interface can be plugged into PCI connectors **821**.

In one embodiment, I/O bridge **822** is a chip that provides connection and control to one or more independent IDE connectors **824-825**, to a USB (Universal Serial Bus) port **826**, and to ISA (Industry Standard Architecture) bus **830**. In this embodiment, IDE connector **824** provides connectivity for up to two standard IDE-type devices such as hard disk drives, CDROM (Compact Disk-Read-Only Memory) drives, DVD (Digital Video Disk) drives, or TBU (Tape-Backup Unit) devices. In one similar embodiment, two IDE connectors **824** are provided, and each provide the EIDE (Enhanced IDE) architecture. In the embodiment shown, SCSI (Small Computer System Interface) connector **825** provides connectivity for up to seven or fifteen SCSI-type devices (depending on the version of SCSI supported by the embodiment). In one embodiment, I/O bridge **822** provides ISA bus **830** having one or more ISA connectors **831** (in one embodiment, three connectors are provided). In one embodiment, ISA bus **830** is coupled to I/O controller **852**, which in turn provides connections to two serial ports **854** and **855**, parallel port **856**, and FDD (Floppy-Disk Drive) connector **857**. In one embodiment, FDD connector **857** is connected to FDD **858** that receives removable media (floppy diskette) **859** on which is stored data and/or program code **860**. In one such embodiment, program code **860** includes code that controls programmable system **800** to perform the method described below. In another such embodiment, serial port **854** is connectable to a computer network such as the Internet, and such network has program code **860** that controls programmable system **800** to perform the method described below. In one embodiment, ISA bus **830** is connected to buffer **832**, which is connected to X bus **840**, which provides connections to real-time clock **842**, keyboard/mouse controller **844** and keyboard BIOS ROM (Basic Input/Output System Read-Only Memory) **845**, and to system BIOS ROM **846**.

By means of techniques such as paint **110**, montage **111** and animation **112** **(FIG. 1)**, or by substituting a can image **602** **(FIG. 6)** in MPEG-4, referring back to **FIG. 7**, the identity of beer can **703** is modified **702** for branding.

In a very simple embodiment, the brand identity of beer can **703** may be sold to an interested party. Beer can **703** is modified **702** to brand the beer can according to the desires of the interested party. The moving content **700** containing scene **701** with branded beer can **703** is then distributed to the public.

In another embodiment, the brand identity of an item may be sold to an interested party according to time of distribution of the moving content. By way of example, consider the case where the moving content **700** is a motion picture with a time limited distribution run. The distribution run may be divided into a number of time slots. Within each time slot, an interested party may purchase product placement.

Referring now to **TABLE 1**, a six week distribution run of a motion picture is represented incorporating beer can **703**. As shown, the brand identity of beer can **703** is divided into weekly time slots, each of which has been sold to an interested party and defined accordingly. Brand names are used solely for the purpose of example.

According to this embodiment, distribution of these versions of the motion picture is controlled so that the appropriate brand is displayed for the appropriate distribution week, in accordance with the schedule set forth in **Table 1**.

TABLE 1

EXEMPLARY TIME SLOTS FOR PRODUCT PLACEMENT

Distribution Week	**Brand**
week 1	Budweiser
week 2	Coors
week 3	Coors
week 4	Miller's
week 5	Budweiser
week 6	Samuel Adams

As will be appreciated by those skilled in the art, different time slots may have different value, based in part upon the anticipated variation in box office receipts (corresponding to viewership) over the distribution run.

Referring now to **FIG. 9A**, an exemplary block diagram of this embodiment is shown. A contract is formed **901** for product placement, in this example Coors beer, in existing content for distribution in a particular week, in this example in week 2. Subsequently, by techniques known in the art as illustrated in **FIG. 7**, a product item, in this example a can of Coors beer, is placed **902** in the content. When the contracted time for distribution arrives, in this example week 2, the content with the placed object is distributed **903**.

In another embodiment, the brand identity of an item may be sold to an interested party according to geographic territory of distribution. By way of example, consider the case where the moving content **700** is a video game to be distributed world-wide in different versions. The moving content **700** is produced in several different versions, each targeted for a particular geographic area of distribution. An interested party may buy product placement for the version of the game for a particular geographic area.

Referring now to **TABLE 2**, the geographic distribution is shown of versions of a video game incorporating beer can **703**. As shown, the brand identity of beer can **703** depends upon geographic distribution version, each of which has been sold to an interested party and defined accordingly. Again, brand names are used solely for the purpose of example.

TABLE 2

EXEMPLARY GEOGRAPHIC VERSIONS FOR PRODUCT PLACEMENT

Intended Distribution	**Brand**
North America Midwest	Budweiser
North America Southwest	Coors
Japan	Asahi
United Kingdom	Guiness
Continental Europe	Heineken

Referring now to **FIG. 9B**, an exemplary block diagram of this embodiment is shown. A contract is formed **904** for product placement, in this example also Coors beer, in existing content for distribution to a particular geographic area, in this example to Southwestern North America. Subsequently, by techniques known in the art as

illustrated in **FIG. 7**, the product item, in this example a can of Coors beer, is placed **902** in the content. The content with the placed product is then distributed **905** to the contracted area, in this example Southwestern North America.

In yet another embodiment, the brand identity of an item may be sold to an interested party according the distribution channel of the moving content. By way of example, suppose that moving content **700** is a motion picture that will be distributed through theaters, through video rentals and through cable broadcast. Versions of content **700** for each of these channels may have different branding for beer can **703**, as illustrated in **Table 3**.

TABLE 3

EXEMPLARY PRODUCT PLACEMENT BY CHANNEL

Intended Distribution Channel	**Brand**
Cable	Budweiser
Video Rental	Coors
Theaters	Anchor Steam

As will be appreciated by those skilled in the art, different distribution channels may have different values for product placement, and so would be priced accordingly.

Referring now to **FIG. 9C**, an exemplary block diagram of this embodiment is shown. A contract is formed **906** for product placement, Coors beer in this example as well, in existing content for distribution through a particular channel, in this example to video rental outlets. Subsequently, by techniques known in the art as illustrated in **FIG. 7**, a product item, in this case Coors beer, is placed **902** in the content. The content with the placed product is then distributed **907** through the contracted distribution channel, in this case video rental outlets.

As will be further appreciated by those skilled in the art, combinations of the foregoing embodiments are possible, wherein product placement and pricing therefor vary according to combinations of time, geographical distribution and/or distribution channel.

Although the invention has been described with a certain degree of particularity, it should be recognized that elements thereof may be altered by persons skilled in the art without departing from the spirit and scope of the invention.

Accordingly, the present invention is not intended to be limited to the specific forms set forth herein, but on the contrary, it is intended to cover such alternatives, modifications and equivalents as can be reasonably included within the scope of the invention. The invention is limited only by the following claims and their equivalents.